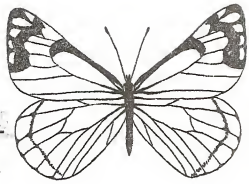
MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DIVISION OF FORESTRY

INSECT AND DISEASE REPORT



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DOUGLASFIR TUSSOCK MOTH DETECTION SURVEY USING PHEROMONE-BAITED STICKY TRAPS - 1976

By

Steve Kohler, Entomologist
Cooperative Forest Management
Division of Forestry

SUMMARY

In 1975, pheromone-baited sticky traps were placed at 125 locations throughout the host range of Douglasfir tussock moth, Orgyia pseudotsugata (McDunnough), in western Montana. Male moths were caught at 69 of these locations, but none were caught east of the Continental Divide. In 1976, traps with stronger baits were placed at 43 locations, chiefly east of the Continental Divide. Douglasfir tussock moth males were caught at only two locations east of the Divide. Both sites were in the Wolf Creek area north of Helena.

INTRODUCTION

In work done in 1975, pheromone-baited sticky traps were placed at 125 locations throughout the entire host range (Douglasfir and spruce-true fir types) of Douglasfir tussock moth, Orgyia pseudotsugata (McDunnough), which included the western half of the State (Kohler, 1976). Male Douglasfir tussock moths were caught at 69 of the 125 total locations. Although approximately 30 of the locations were east of the continental Divide, no moths were taken there. Results of the trapping showed the principal distribution of Douglasfir tussock moth in Montana to be the northwest portion of the State (Figure 1). This included the Flathead Valley, the Swan Valley, the Clark Fork drainage from Rock Creek (east of Missoula) to Idaho, the Blackfoot River drainage east from Missoula to Greenough, and the Bitterroot Valley south to Darby.

Since there are large areas of relatively pure Douglasfir stands east of the Continental Divide in Montana, providing abundant host material, it was expected that Douglasfir tussock moth should occur in at least some of these areas. To verify this suspicion, and also to refine the known distribution of Douglasfir tussock moth in Montana, traps were placed at 43 locations in 1976. Most of the trapping locations east of the Continental Divide from the 1975 survey were repeated, and some new locations added.

METHOD

Traps used in the survey were again the Pherocon-2 Insect Trap, manufactured by Zoecon Corporation, Palo Alto, California. The traps are a white paper fold-out type with sticky coating on the inside. The assembled trap forms a square-shaped sleeve six inches long and three inches on each side.

Trap placement began August 5, 1976. All traps were in the field by August 31, 1976. Trap retrieval began October 1, 1976, and was completed October 29, 1976. In the field, the traps were positioned on open-grown Douglasfir at least ten feet tall. They were fastened with wire ties to the outer branches of the lower tree crowns where they could be reached from the ground. Care was taken that trap entrances were not obscured by branches, providing for easy access by moths. Two traps were placed at each location on separate trees at least 100 feet apart.

Baits for the traps were provided by the U. S. Department of Agriculture, Forest Service, Pacific Northwest Forest & Range Experiment Station, Corvallis, Oregon. They consisted of pieces one centimeter square, cut from a sheet of mylar plastic coated with a plastic resin containing the pheromone, (2)-6-heneicosen-11-one (Smith, et al., 1975). Concentration of the pheromone was higher than either of the bait types used in the 1975 survey. The mylar plastic bait squares were suspended inside the trap on the tip of a pin pushed through the side of the trap.

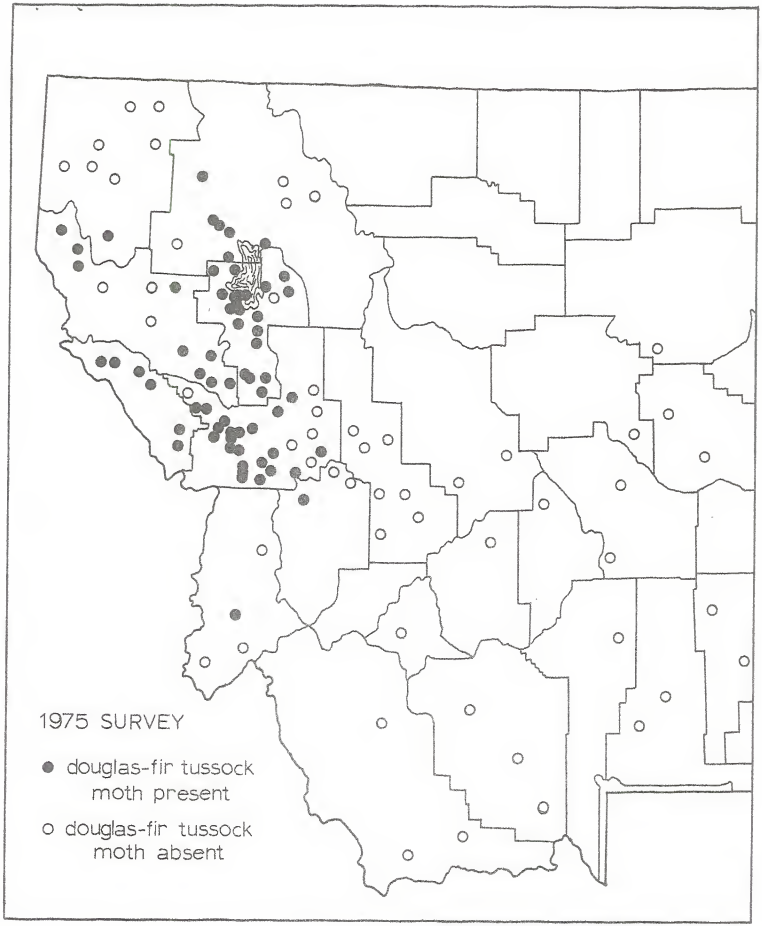

1975 SURVEY
douglas-fir tussock moth present
douglas-fir tussock moth absent

Figure 1

After retrieval, the traps were stored on end and transported to the laboratory. This prevented the traps from collapsing and damaging the trapped insects, thereby making identification more difficult. In the laboratory, the traps were cut open for examination, and numbers of Douglasfir tussock moth and other tussock moths recorded.

RESULTS

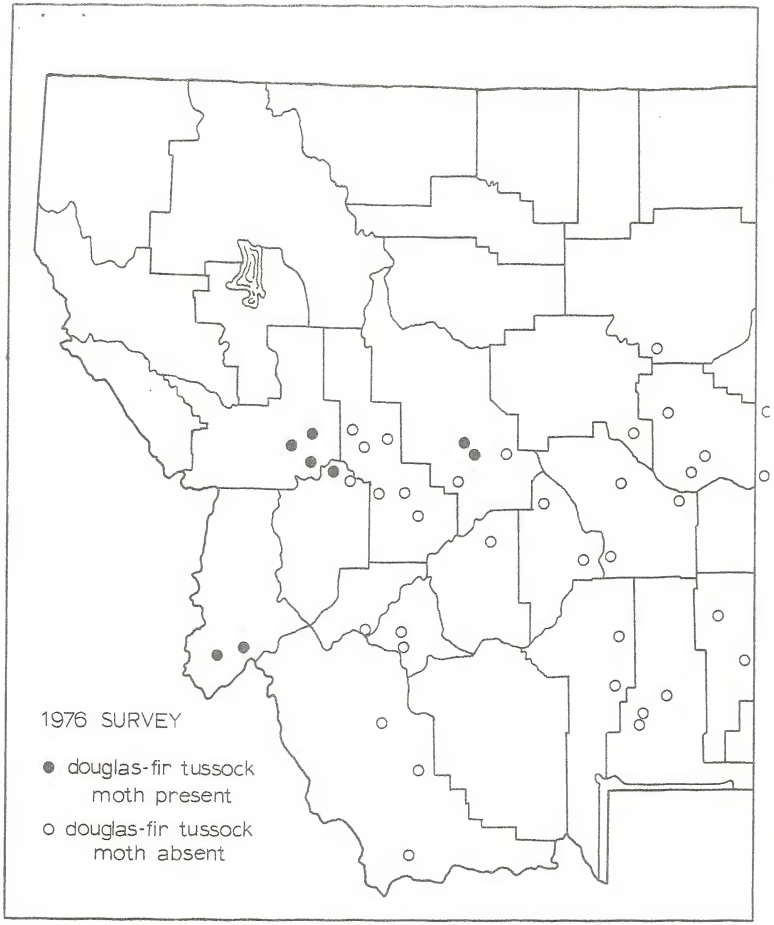
Douglasfir tussock moth males were caught at eight of the 43 locations of the 1976 survey. Of these locations, six were west of the Continental Divide, and two were east of the Continental Divide (Figure 2). East of the Divide, Douglasfir tussock moth males were trapped at a location in the Wolf Creek State Forest, and at another location south of Wolf Creek.

Four different species of tussock moths were caught in the traps in 1976. They were: Douglasfir tussock moth, Orgyia pseudotsugata (McDunnough); western tussock moth, O. cana (Edwards); rusty tussock moth, O. antiqua (Linnaeus); and Dasychira vagans grisea (Barnes & McDunnough).

Location of trapping sites, number and species of tussock moths caught, are given in the following table.

Table 1. Location of pheromone-baited sticky trap sites in Montana and number of adult male tussock moths trapped at each site in 1976.

Plot No.	Location	T.	R.	S.	Aspect	Elevation	Trap Tree Species	Number of Tussock Moths Trapped			
								O. pseudotsugata	O. cana	O. antiqua	D. vagans
45	Highwood Mountains	19N	9E	22	SW	5150	DF	0	0	1	0
66	Lone Tree Creek	16N	9E	25	NW	4900	DF	0	0	17	0
70	Monarch	16N	7E	34	Flat	4620	DF	0	0	54	0
79	Gold Creek	14N	16W	32	S	3750	DF	38	0	10	2
80	East Belmont Creek	14N	16W	24	NW	3950	DF	18	0	2	1
81	Ovando	14N	13W	2	Flat	4400	DF	0	0	25	1
82	Arrastra Creek	14N	10W	28	S	4270	DF	0	0	18	1
88	Holter Dam	13N	2W	4	N	4200	DF	0	0	0	0
89	Judith River	12N	11E	12	SW	4900	DF	0	0	2	0
94	Cramer Creek	12N	16W	36	W	5500	DF	18	0	4	0
95	Bear Gulch	11N	14W	3	E	5450	DF	1	0	7	1
96	Rattler Gulch	12N	13W	36	E	5720	DF	0	0	0	0
97	Green Pole Creek	13N	17E	25	E	4820	DF	0	0	37	0
100	Hoover Creek	10N	11W	3	E	5240	DF	0	0	1	0
101	Davis Creek	11N	9W	16	NE	5300	DF	0	0	6	1
102	Marysville	12N	5W	32	SE	5400	DF	0	0	15	0
103	Miller Gulch	11N	7E	8	SE	5500	DF	0	0	4	0
105	Little Blackfoot River	10N	8W	3	N	4785	DF	0	0	4	0
106	Avalanch Creek	10N	1E	11	NW	4250	DF	0	47	0	0
109	Jefferson City	7N	3W	16	N	4800	DF	0	0	18	2
110	Grassy Mountain	7N	5E	34	E	6000	DF	0	0	2	0
112	Divide Creek	2N	9W	32	E	5900	DF	0	0	0	0
113	S. Fork Big Timber Creek	3N	13E	16	N	6040	DF	0	0	1	0
114	Mink Creek	1N	18W	6	NW	5420	DF	3	0	9	0
115	Piquett Creek	1N	21W	3	E	5040	DF	6	4	12	0
116	Bridger Mountains	1N	7E	4	E	5650	DF	0	0	41	0
117	Cherry Creek	2S	14E	9	NW	5900	DF	0	0	3	1
118	Pine Creek	4S	10E	7	NW	5550	DF	0	0	10	0
120	Birch Creek	5S	10W	15	W	6200	DF	0	2	1	0
121	Big Creek	6S	7E	18	SW	5500	DF	0	0	2	0
124	Blacktail Creek	9S	8W	16	N	6820	DF	0	2	4	0
125	Little Sheep Creek	14S	9W	36	E	6800	DF	0	1	0	0
126	Wolf Creek	15N	4W	30	N	4650	DF	1	0	1	0
127	S. of Wolf Creek	14N	4W	22	W	4590	DF	1	0	2	0
128	Ross Gulch	7N	4E	32	NE	5200	DF	0	11	2	0
129	Potter Creek	13N	21E	16	N	4900	DF	0	0	64	0
130	Burley Peak	11N	11E	5	NW	5800	DF	0	0	13	0
131	Spring Creek	10N	10E	29	N	5020	DF	0	0	0	0
132	Big Creek	6S	7E	13	E	5200	DF	0	0	0	0
133	Bear Canyon	2S	7E	30	N	5010	DF	0	0	64	0
134	Big Hole River	1N	10W	32	S	5860	DF	0	0	1	0
135	Divide	1S	9W	7	N	5920	DF	0	0	0	0
87	Helmville	13N	12W	15	E	4300	DF	0	0	9	0


1976 SURVEY
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douglas-fir tussock moth absent

Figure 2

REFERENCES

Kohler, S. 1976. Douglasfir tussock moth detection survey using pheromone-baited sticky traps. Montana Department of Natural Resources & Conservation, Division of Forestry, Insect & Disease Report 76-2.

Smith, R.G., G.E. Daterman, and G.D. Daves, Jr. 1975. Douglasfir tussock moth: Sex pheromone identification and synthesis. Science 188:63-64.

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